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Datasheet for the decision of 30 January 2009

Case Number: T 0508/07 - 3.2.01

Application Number: 04011706.1

Publication Number: 1477377

IPC: B60R 22/46

Language of the proceedings: EN

Title of invention:
Webbing retractor

Applicant:
KABUSHIKI KAISHA TOKAI RIKA DENKI SEISAKUSHO, et al

Opponent:
-

Headword:
-

Relevant legal provisions:
-

Relevant legal provisions (EPC 1973):
EPC Art. 56

Keyword:
"Inventive step (no)"

Decisions cited:
-

Catchword:
-

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Case Number: T 0508/07 - 3.2.01

D E C I S I O N
of the Technical Board of Appeal 3.2.01
of 30 January 2009

Appellant: KABUSHIKI KAISHA TOKAI RIKA DENKI SEISAKUSHO
260, Toyota 3-chome
Ohguchi-cho
Niwa-gun
Aichi 480-0195 (JP)

Representative: Dreiss, Fuhlendorf, Steimle & Becker
Patentanwälte
Postfach 10 37 62
D-70032 Stuttgart (DE)

Decision under appeal: **Decision of the Examining Division of the European Patent Office posted 16 October 2006 refusing European application No. 04011706.1 pursuant to Article 97(1) EPC 1973.**

Composition of the Board:

Chairman: S. Crane
Members: C. Narcisi
G. Weiss

Summary of Facts and Submissions

I. The European patent application No. 04 011 706.1 was refused with the decision of the Examining Division posted on 16 October 2006. The Examining Division concluded that the subject-matter of claim 1 then on file was not new over D1 (US-A-5 788 176). Against this decision an appeal was lodged by the Applicant on 13 December 2006 and the appeal fee was paid at the same time. The statement of grounds of appeal was filed on 14 February 2007 and a new claim 1 was filed.

II. In the annex to the summons to the oral proceedings the Board set out that the subject-matter of claim 1 on file was not new over D1 and that it appeared that none of the features included in the dependent claims could possibly contribute to inventive step in view of further prior art D2 (EP-A-1 155 928).

III. Oral proceedings were held on 30 January 2009. The Appellant requested that a patent be granted on the basis of claim 1 as further filed with letter of 7 January 2009.

Claim 1 reads as follows:

"A webbing retractor (10) used in a seat belt device of a vehicle, the webbing retractor (10) comprising: a webbing (22); a spool (20) to which one end of the webbing (22) is fixed, and which can rotate in a webbing take-up direction and in a webbing pull-out direction which is opposite to the webbing take-up direction;

a torsion shaft (28), one end of which is fixed to one axial direction end side of the spool (20);
a pretensioner (50) connected to another end of the torsion shaft (28);
a rotating portion (72) that is connected to the other end of the torsion shaft (28);
a press-contact portion (70) that is disposed coaxially to the rotating portion (72) and is mechanically connectable to the rotating portion (72);
a pretensioner (50) disposed at a side of the other end of the torsion shaft (28), the pretensioner (50) including a pinion (54) provided at the press-contact portion (70) and a rack-bar (60) that can mesh with the pinion (54); and
a lock mechanism (80) that releasably locks the other end of the torsion shaft (28) when the vehicle is in a rapid deceleration state,
the lock mechanism (80) being structured such that in a state in which the lock mechanism (80) is operated, the torsion shaft (28) is locked and rotation of the spool (20) in the webbing pull-out direction is restricted at the other end of the torsion shaft (28),
wherein all of the lock mechanism (80) is provided only at a side of the spool where the pretensioner (50) is provided,
wherein, when the vehicle is in the deceleration state, the rack bar (60) is moved in a predetermined direction by receiving a force to rotate the pinion (54) so the press-contact portion (70) at which the pinion (54) is provided is mechanically connected to the rotating portion (72), and
the torsion shaft (28) is rotated in a webbing take-up direction due to rotation of the rotating portion (72) due to rotation of the pinion (54), and

wherein, when the vehicle is in the deceleration state, the lock mechanism (80) locks the other end of the torsion shaft (28) so that rotation of the rotating portion (72) connected to the other end of the torsion shaft (28) is restricted and so that rotation of the pinion (54) which is mechanically connected to the rotating portion (72) due to the deceleration state is restricted in the webbing pull-out direction to restrict the movement of the rack bar (60) in a direction opposite to the predetermined direction."

IV. The Appellant's submissions may be summarized as follows:

The subject-matter of claim 1 is new over both D1 and D2. In particular, D1 does not disclose "a pretensioner disposed at a side of the other end of the torsion shaft, the pretensioner including a pinion provided at the press-contact portion and a rack bar that can mesh with the pinion", "wherein when the vehicle is in a deceleration state, the rack bar is moved in a predetermined direction by receiving a force to rotate the pinion so the press-contact portion at which the pinion is provided is mechanically connected to the rotating portion, and the torsion shaft is rotated in a webbing take-up direction due to rotation of the rotating portion due to rotation of the pinion", and "so that rotation of the pinion which is mechanically connected to the rotating portion due to the deceleration state is restricted in the webbing pull out direction to restrict the movement of the rack bar in a direction opposite to the predetermined direction". According to the invention, since there is no backlash on the pretensioner and since the rotating

portion at the other end of the torsion shaft is locked against rotating in the pull-out direction, a precise force limiter load can be determined. This load depends exclusively on the deformation characteristics of the torsion shaft and is not influenced by the force of the pretensioner driving the torsion shaft in a take-up direction. Although D1, in the same way as the invention, discloses that the lock mechanism and the pretensioner are located on the same side of the torsion bar, nevertheless the problem of providing a webbing retractor having a precisely defined force limiter load is not identified in D1. Accordingly, the skilled person would have no incentive to replace the pretensioner of D1, comprising the reel 20 and the draw cable 18, since whether or not this may have an influence on the force limiter load, the mentioned problem is anyway not identified in D1 and moreover any other objective reason for replacing the pretensioner apparently does not exist. Consequently, the combination of D1 and D2 would not be obvious for the skilled person.

Reasons for the Decision

1. The appeal is admissible.

2. The Board agrees with the Appellant in that the subject-matter of claim 1 is new over D1 and D2 and in that it differs from the webbing retractor disclosed in D1 by the above mentioned features. It is likewise noted that these features are derivable exclusively from the fact that the pretensioner of the invention includes a pinion and a rack bar, whereas according to

D1 the pretensioner comprises a draw cable 18 engaging on a cable reel 20.

3. For the purpose of assessing inventive step it is entirely irrelevant whether or not the problem of defining the force limiter load is identified in D1, given that D1 is considered as closest prior art and that undisputedly it already discloses the solution to this problem as proposed by the invention itself, i.e. according to D1 "the lock mechanism is provided only at a side of the spool where the pretensioner is provided" (see D1, figures 2 to 4) as required by claim 1. On the other hand, the mentioned replacement of the pretensioner shown in D1 with a pretensioner comprising a rack bar and pinion mechanism as disclosed in the webbing retractor according to D2 (see figures 2,14,17,18) provides essential advantages in that the latter pretensioner is more compact, it is not subject to elastic elongation or deformation and it is considerably more robust. All in all, the skilled person in an attempt to simplify the construction and increase reliability of the webbing retractor would therefore combine D1 and D2 in an obvious manner thus leading to the subject-matter of claim 1 (Article 56 EPC 1973).

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner S. Crane